*****Not Read*****

Trend Study 6-8-96

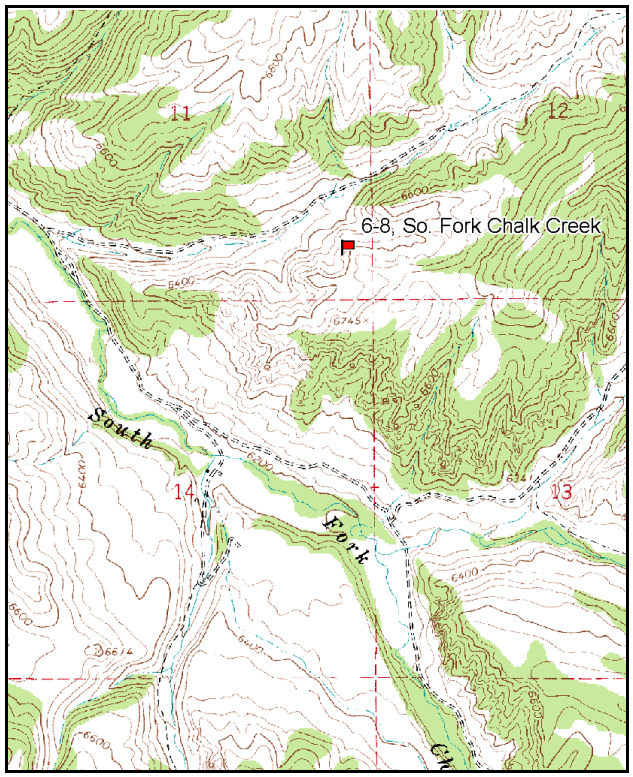
Study site name: South Fork Chalk Creek . Vegetation type: Mountain Brush .

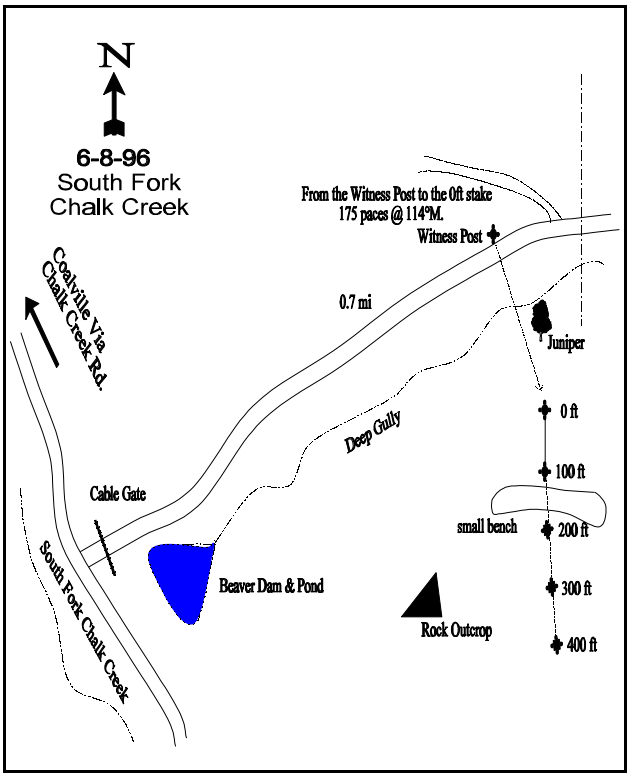
Compass bearing: frequency baseline 121 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From Coalville, go up Chalk Creek to the South Fork Road. Go up the South fork of Chalk Creek approximately 3 miles to a cable gate at the mouth of Cottonwood Canyon. Go up this side canyon 0.7 miles to a witness post and park. A lone juniper should be across the flat on the other side of a deep gully. Cross the gully and walk up the slope approximately 175 paces at 114 degrees magnetic from the witness post to the 0-foot baseline stake which is located just below a knoll of conglomerate rock on the ridge. All study stakes are short fenceposts, the 0-foot stake has a white top.





Map Name: Upton

Diagrammatic Sketch

Township 2N , Range 6E , Section 11

UTM 4529544 N 480731 E

DISCUSSION

Trend Study No. 6-8

*******This study was not read in 2001 because permission to access this private land was not obtained. This study will be reevaluated during the next rotation. Maps, data tables, and a site narrative for this study are included from the 1996 volume 2 Utah Big Game Range Trend Studies report.

The South Fork Chalk Creek trend study was established in 1990 and is located in a wide side canyon of the South Fork of Chalk Creek. The area is privately-owned, as is all of the winter range in the area. The study is on a northwest-facing slope, which supports a mixed mountain brush community dominated by mountain big sagebrush. Mountain big sagebrush contributed 64% of the browse cover in 1996. The south-facing slopes in the area have juniper and sparse stands of sagebrush. The bottoms of the canyon have been sprayed to kill shrubs. Cattle use is heavy in the bottom areas. The ridges to the south had also recently burned prior to the 1996 reading. All these factors tend to concentrate deer use on the areas where browse forage still remains. Quadrat frequency pellet group data indicates that deer use is moderately high (38%), while that of elk (8%) and cattle (3%) is considered light.

The study site is on a ridge with a northwest exposure and a moderately steep slope (56%) at an elevation of 6,600 feet. Soil texture is a sandy clay loam with a slightly acidic soil reaction (6.2 pH). Effective rooting depth is the most shallow of any site in this management unit at 8 inches. This is mostly because the soil surface and profile are rocky with rock-pavement covering 25% of the ground surface. However, vegetative cover, litter cover, and percent organic matter is above average when compared to other sites within the area. There is a very deep gully in the canyon bottom.

The study samples a sagebrush covered ridge with components of serviceberry, true mountain mahogany, and snowberry. Sagebrush cover is currently estimated at 16% with a density of 4,220 plants/acre. The sagebrush has a moderately hedged growth form. Vigor and production varies, but is generally good. Those classified with poor vigor have decreased from 23% to 9%. Overall leader growth was low in 1990, but now appears to be average. The mountain mahogany had been heavily used in 1990 and also had poor vigor (20%) related to the drought. In 1996, poor vigor decreased to only 5% of the population. Low rabbitbrush and broom snakeweed are fairly common on the more shallow soils. Low rabbitbrush is not currently increasing, but broom snakeweed has the characteristics of an expanding population with a high biotic potential (proportion seedlings to the population density) at 46%, and a high proportion of young in the population (41%).

Sandberg bluegrass and cheatgrass are the most common grasses. A wide variety and high diversity of perennial forbs occupy the site, yet together they only provide about 4% total cover. Yarrow, silvery lupine, and redroot buckwheat are the most prevalent of the 37 species encountered.

1990 APPARENT TREND ASSESSMENT

There is a large amount of rock exposed, but the remaining soil on the site is well protected and currently appears stable. The populations of the key browse species also appear stable with respect to age class structure. However, continued heavy use and the resulting increased decadence could lead to downward vegetative trends. Quality winter range is limited in the area due to past and current management practices on private lands. An end to the drought would help mitigate these downward changes.

1996 TREND ASSESSMENT

Soil trend is slightly improving with percent bare ground decreasing from 12% to 7%. Litter cover has also increased. Also, the nested frequency ratio of bare ground to vegetation and litter (protective ground cover) is quite good at 1:4.7. Usually any value > 1:3 shows little problem with erosion from high intensity summer storms. The key browse species is mountain big sagebrush which contributes 64% of the total browse cover. Population density has gone down slightly, but what is more important is the low proportion of dead plants in the population (17%). Moderate to heavy use has increased from 67% to 84% of the population, but percent decadence has slightly declined from 41% to 37%. Additionally, the proportion of the decadent plants that were classified as having poor vigor or dying has also decreased from 55% to 23% indicating that it has turned the corner and the loss of plants has now stopped. Other key browse species include serviceberry, true mountain mahogany, and mountain snowberry. These species appear to have stable populations while providing another 14% of the browse cover. Trend for browse, where the key species is mountain big sagebrush (64% of the browse cover), is currently stable. Trend for the herbaceous understory is slightly down with a significantly lower sum of nested frequency for perennial grasses which make up 79% of the herbaceous cover.

TREND ASSESSMENT
soil - slightly improving (4)
browse - stable at this time, (3)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Herd unit 06 , Study no: 8

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %
		'90	'96	'90	'96	'96
G	Agropyron spicatum	137	*56	52	24	.81
G	Bromus tectorum (a)	-	155	-	47	3.54
G	Carex spp.	29	*57	14	26	1.71
G	Poa fendleriana	104	119	41	48	2.19
G	Poa pratensis	2	1	1	1	.00
G	Poa secunda	301	*223	93	72	7.41
G	Sitanion hystrix	12	14	6	8	.14
G	Stipa columbiana	4	6	1	2	.18
G	Stipa lettermani	-	5	-	3	.07
G	Vulpia octoflora (a)	-	4	-	2	.01
Total for Annual Grasses		0	159	0	49	3.55
Total for Perennial Grasses		589	481	208	184	12.53
Total for Grasses		589	640	208	233	16.09
F	Achillea millefolium	63	73	29	29	1.25
F	Agoseris glauca	8	4	3	3	.01
F	Alyssum alyssoides (a)	-	54	-	19	.24
F	Allium spp.	2	-	2	-	-
F	Antennaria rosea	33	*19	19	8	.19

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %
		'90	'96	'90	'96	'96
F	Arabis spp.	5	15	3	7	.03
F	Astragalus beckwithii	-	2	-	1	.03
F	Astragalus convallarius	17	*5	9	2	.03
F	Astragalus utahensis	6	8	4	4	.23
F	Castilleja linariaefolia	11	19	7	11	.13
F	Calochortus nuttallii	1	1	1	1	.00
F	Cirsium undulatum	-	*15	-	9	.29
F	Collinsia parviflora (a)	-	29	-	9	.07
F	Cordylanthus ramosus (a)	-	5	-	4	.19
F	Crepis acuminata	24	*9	12	4	.02
F	Cruciferae	3	-	1	-	-
F	Cryptantha spp.	-	1	-	1	.00
F	Cymopterus spp.	1	-	1	-	-
F	Epilobium brachycarpum (a)	-	3	-	1	.00
F	Erigeron pumilus	38	*16	19	8	.14
F	Eriogonum racemosum	34	42	18	20	.35
F	Erigeron strigosis	-	*23	-	11	.13
F	Eriogonum umbellatum	12	*2	6	1	.03
F	Gayophytum ramosissimum (a)	-	10	-	4	.02
F	Hackelia patens	5	4	3	4	.02
F	Heuchera parvifolia	1	-	1	-	-
F	Holosteum umbellatum (a)	-	8	-	3	.01
F	Lupinus argenteus	3	*18	2	10	.39
F	Machaeranthera canescens	3	3	1	2	.04
F	Penstemon spp.	-	4	-	2	.03
F	Phlox longifolia	24	25	13	11	.15
F	Polygonum douglasii (a)	-	53	-	30	.14
F	Ranunculus spp.	2	-	1	-	-
F	Senecio integerrimus	1	-	1	-	-
F	Senecio multilobatus	3	-	1	-	-
F	Tragopogon dubius	-	8	-	3	.01
F	Unknown forb-perennial	27	*-	13	-	-
Total for Annual Forbs		0	162	0	70	0.69
Total for Perennial Forbs		327	316	170	152	3.55
Total for Forbs		327	478	170	222	4.25

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 06 , Study no: 8

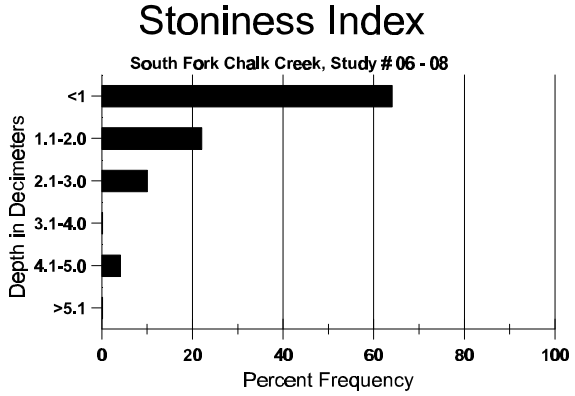
Type	Species	Strip Frequency '96	Average Cover % '96
B	Amelanchier alnifolia	19	1.51
B	Artemisia tridentata vaseyana	83	16.14
B	Cercocarpus montanus	20	.86
B	Chrysothamnus nauseosus albicaulis	1	.38
B	Chrysothamnus viscidiflorus viscidiflorus	52	3.02
B	Eriogonum heracleoides	13	.63
B	Gutierrezia sarothrae	23	.61
B	Quercus gambelii	3	.79
B	Symphoricarpos oreophilus	26	1.37
B	Tetradymia canescens	3	-
Total for Browse		243	25.34

BASIC COVER --
Herd unit 06 , Study no: 8

Cover Type	Nested Frequency '96	Average Cover % '90	'96
Vegetation	366	13.75	45.09
Rock	303	10.00	18.52
Pavement	218	13.50	6.75
Litter	396	42.50	46.06
Cryptogams	119	7.50	5.89
Bare Ground	162	12.75	7.04

SOIL ANALYSIS DATA --
Herd Unit 06, Study no: 08, South Fork Chalk Creek

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
8.0	71.6 (9.0)	6.2	54.9	23.7	21.4	4.9	14.6	89.6	.4



PELLET GROUP FREQUENCY --
Herd unit 06 , Study no: 8

Type	Quadrat Frequency '96
Rabbit	2
Elk	8
Deer	38
Cattle	3

BROWSE CHARACTERISTICS --
Herd unit 06 , Study no: 8

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
Y	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	4	-	2	-	-	-	-	-	-	4	2	-	-	120			6
M	90	-	-	1	-	-	-	-	-	-	1	-	-	-	66	13	19	1
	96	2	9	5	-	3	-	-	-	-	9	2	8	-	380	18	28	19
D	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	2	-	-	-	-	-	-	-	-	-	2	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	100%	00%	+88%
'96	52%	26%	37%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'90	66		0%
	'96	540		7%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	90	13	-	-	-	-	-	-	-	-	13	-	-	-	866			13
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	90	19	11	-	-	-	-	1	-	-	31	-	-	-	2066			31
	96	5	8	-	-	-	-	-	-	-	13	-	-	-	260			13
M	90	1	10	4	-	-	-	1	-	-	15	1	-	-	1066	18	31	16
	96	13	81	25	1	-	-	-	-	-	119	-	1	-	2400	22	36	120
D	90	5	14	14	-	-	-	-	-	-	15	-	-	18	2200			33
	96	10	47	18	3	-	-	-	-	-	60	-	8	10	1560			78
X	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	840			42

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	44%	23%	23%	-21%
'96	64%	20%	09%	

Total Plants/Acre (excluding Dead & Seedlings)				
'90	5332	Dec:		41%
'96	4220			37%

Cercocarpus montanus																		
S	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	90	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	96	-	7	4	-	-	-	-	-	-	11	-	-	-	220			11
M	90	-	-	2	-	-	-	-	-	-	2	-	-	-	133	13	19	2
	96	-	3	18	4	-	1	-	-	-	22	2	2	-	520	21	27	26
D	90	-	-	1	1	-	-	-	-	-	1	-	-	1	133			2
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	80%	20%	+55%
'96	27%	62%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'90	332	Dec:		40%
'96	740			0%

Chrysothamnus nauseosus albicaulis																		
Y	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	26	45	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	00%	-70%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'90	66	Dec:		-
'96	20			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
Y	90	21	-	-	-	-	-	-	-	-	18	-	3	-	1400			21
	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
M	90	16	4	-	1	-	-	-	-	-	18	-	3	-	1400	10	14	21
	96	101	1	-	3	-	-	-	-	-	105	-	-	-	2100	13	19	105
D	90	17	-	-	2	1	-	2	-	-	11	-	2	9	1466			22
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
X	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	08%	00%	27%	-45%
'96	.85%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'90	4266	Dec:		34%
'96	2340			3%

Eriogonum heracleoides																		
Y	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	26	3	-	2	-	-	-	-	-	31	-	-	-	620	6	8	31

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	00%	00%	00%	
'96	09%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'90	0	Dec:	-
'96	660		-

Gutierrezia sarothrae																		
S	90	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	96	52	-	-	-	-	-	-	-	-	52	-	-	-	1040			52
Y	90	4	1	-	-	-	-	-	-	-	5	-	-	-	333			5
	96	46	-	-	-	-	-	-	-	-	46	-	-	-	920			46
M	90	11	-	-	1	-	-	-	-	-	12	-	-	-	800	6	8	12
	96	66	-	-	-	-	-	-	-	-	66	-	-	-	1320	8	9	66

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'90	06%	00%	00%	+49%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'90	1133	Dec:	-
'96	2240		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Quercus gambelii																		
M	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180	37	41	9
% Plants Showing				Moderate Use			Heavy Use			Poor Vigor						%Change		
		'90		00%			00%			00%								
		'96		00%			00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)													'90		0	Dec:		-
													'96		180			-
Symphoricarpos oreophilus																		
S	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	12	-	-	2	-	-	-	-	-	14	-	-	-	280			14
M	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	21	10	-	6	-	-	-	-	-	36	-	1	-	740	15	21	37
D	90	-	1	1	1	2	-	4	-	-	6	-	-	3	600			9
	96	1	-	-	-	-	-	-	-	-	-	-	1	-	20			1
% Plants Showing				Moderate Use			Heavy Use			Poor Vigor						%Change		
		'90		33%			11%			33%						+42%		
		'96		19%			00%			04%								
Total Plants/Acre (excluding Dead & Seedlings)													'90		600	Dec:		100%
													'96		1040			2%
Tetradymia canescens																		
Y	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	1	-	-	-	-	-	-	-	1	-	-	-	20	10	15	1
% Plants Showing				Moderate Use			Heavy Use			Poor Vigor						%Change		
		'90		00%			00%			00%								
		'96		33%			00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)													'90		0	Dec:		-
													'96		60			-